



AEROSPACE MATERIAL SPECIFICATION

AMS-A-21180™
REV. C

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Superseding AMS-A-21180B

Aluminum-Alloy Castings, High Strength

RATIONALE

AMS-A-21180C stabilizes this document because it contains mature technology that is not expected to change and thus no further revisions are anticipated.

STABILIZED NOTICE

AMS-A-21180C has been declared "STABILIZED" by the SAE AMS D Nonferrous Alloys Committee. This document was stabilized because this document contains mature technology that is not expected to change and thus no further revisions are anticipated. Previously this document was non-current. The last technical update of this document occurred in August, 2011. Users of this document should refer to the cognizant engineering organization for disposition of any issues with reports/certifications to this specification; including exceptions listed on the certification.

NOTE: In many cases, the purchaser may represent a sub tier supplier and not the cognizant engineering organization. Users are alerted to typographical errors in the headings of the elongation column in Tables 3 and 4, where the square root symbol has been replaced, respectively, by a "?" and a □.

AMS Committee D recommends that the following similar, but not identical, specifications may be considered for future procurement. This listing does not constitute authority to substitute these specifications for the "STABILIZED" specification.

A201-T7

AMS4229 - Aluminum Alloy Castings, High Strength 4.5Cu - 0.70Ag - 0.30Mn - 0.25Mg - 0.25Ti (A201.0-T7) Solution Heat Treated and Overaged

AMS4242 - Aluminum Alloy Castings, 4.7Cu - 0.60Ag - 0.35Mn - 0.25Mg - 0.25Ti (B201.0-T7) Solution Heat Treated and Overaged

C355-T6

AMS4215 - Aluminum Alloy, Castings 5.0Si - 1.2Cu - 0.50Mg (C355.0-T6) Solution and Precipitation Heat Treated

A356-T6

AMS4218 - Aluminum Alloy Castings 7.0Si - 0.35Mg (A356.0-T6P) (Formerly T61P Temper) Solution and Precipitation Heat Treated

A357-T6

AMS4219 - Aluminum Alloy Castings 7.0Si - 0.55Mg - 0.12Ti - 0.06Be (A357.0 T61P) Solution and Precipitation Heat Treated

AMS4289 - Aluminum Alloy Castings 7.0Si - 0.55Mg - 0.12Ti (F357.0-T6) Solution Heat Treated (Beryllium-Free A357-T6)

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D357-T6

- AMS4241 - Aluminum Alloy Castings 7.0Si - 0.58Mg - 0.15Ti - 0.06Be (D357.0-T6) Solution and Precipitation Heat Treated Dendrite Arm Spacing (DAS) Controlled
- AMS4249 - Aluminum Alloy Castings 7.0Si - 0.58Mg - 0.15Ti - 0.06Be (D357.0-T6) Solution and Precipitation Heat Treated Requiring Fatigue and Fracture Toughness Testing
- AMS4288 - Aluminum Alloy Castings 7.0Si - 0.58Mg - 0.15Ti (E357.0-T6) Solution and Precipitation Heat Treated (Beryllium-Free D357-T6)

1. SCOPE

1.1 Scope

This specification covers the requirements for six alloy compositions, four inspection classes, four radiographic quality grades and six classes of mechanical properties of high strength aluminum-alloy castings.

1.2 Classification

Aluminum-alloy castings shall be furnished in the following compositions, grades and classes, as specified (See 6.3.1):

1.2.1 Composition

The chemical composition of the castings shall conform to Table 1, which consists of alloys A201.0, 354.0, C355.0, A356.0, A357.0 and 359.0. Unified Numbering System (UNS) for these alloys are: A12010, A03540, A33550, A13560, A13570 and A03590 respectively.

1.2.2 Inspection Class

Castings shall be classified with respect to criticality of application as defined by AMS2175, and each casting drawing shall specify the class required for the application (See 6.3.1).

1.2.3 Radiographic Grade

The radiographic inspection quality grades shall be as follows (See Table 2):

Grade	Description
A	A highly stressed casting or area of a casting for critical application.
B	A premium grade of casting for critical applications or specified area of a casting with low margins of safety.
C	A high quality grade of casting for general applications or area of a casting with average margin of safety.
D	An area of a casting subjected to only low stresses in a non-critical application.

1.2.4 Mechanical Property Class

The mechanical property class of each casting or area of a casting shall be as specified in Table 3 and 4, as applicable, unless mechanical property requirements are specified on the engineering drawing. Classes are identified as Class 1, 2, or 3 (for designated areas) or 10, 11, or 12 (for any area), as applicable, for the alloy specified.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.